REMARKS

This application has been carefully reviewed in light of the Office Action dated October 1, 2004 (the Office Action). Claims 22 to 28 and 34 to 46 are pending in the application, of which Claims 22 and 37 are independent. Reconsideration and further examination are respectfully requested.

Claims 22, 24 and 25 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,670,980 (Ori). Claims 23, 26 to 28 and 34 were rejected under § 103(a) over Ori in view of U.S. Patent No. 4,977,417 (Takanashi). All of the rejections are respectfully traversed because they fail to establish that Ori, either alone or in combination with Takanashi, teaches every element of the claims. In particular, and as explained more fully below, the applied art fails to disclose at least the feature of an imaging optical system in which a plastic lens and an optical member thereof have spectral characteristics that are related, such that the optical member has a spectral characteristic of transmittance or reflectance similar to the inverse of a spectral characteristic of the transmittance of the plastic lens.

The purpose of the amendments to Claims 22 is to clarify the amended claims and not to narrow the scope of the claims in any way. The phrase "imaging lens system" is replaced with "imaging optical system" to clarify that the components of the imaging system are not limited to lenses. Similarly, the addition of "oscillation" and "of transmittance or reflectance," the deletion of "scanning and," and the change of "wavelength characteristic" to "spectral characteristic" serve to clarify and not to narrow the claims.

The invention concerns transmittance of light in optical scanning systems. Specifically, the invention addresses a design goal for optical scanning systems to produce light beams of uniform intensity. Producing light beams of uniform intensity can be difficult when using a light source whose oscillation wavelength varies, for example, a semiconductor laser whose wavelength varies in time as a result of changes in operational environments. The difficulty of producing light beams of uniform intensity arises because the transmittance of the lenses used in the scanning system, such as plastic lenses, can change over a range of wavelength. Therefore, the intensity of light produced by scanning systems using such lenses can vary as the light source oscillation wavelength varies.

Claim 22 is characterized by an imaging optical system that has at least one plastic lens as well as an optical member having a spectral characteristic of transmittance or reflectance similar to the inverse of a spectral characteristic of the transmittance of the plastic lens. In one example shown in FIG. 14 of the specification, as the transmittance of the plastic lens increases over a range of oscillation wavelength (line "a") the transmittance or reflectance of the optical member (a mirror in this example) decreases over the same range (line "b"). Similarly, if the transmittance of the plastic lens decreases over a range of oscillation wavelength, the transmittance or reflectance of the optical member increases over the range. Thus, by using such an optical member, it is possible to reduce the variation of transmittance of the overall imaging optical system over the range of oscillation wavelength, as shown at line "c" in FIG. 14.

By contrast, Ori is seen to disclose an optical system with a function of correcting the unevenness of the pitch of the light beam caused by the surface tilt of a rotating polygon mirror surface 15. Ori discloses a second optical means 2 including a first

lens 16 and a second lens 17. (lines 12 to 15, column 5 of Ori; FIG. 1 and FIG. 2 of Ori). The second optical means 2 includes at least one plastic lens and causes the light beam deflected by the light-deflecting means to form an image on the surface to be scanned. (lines 40 to 43, column 3 of Ori).

While it is true that in Ori lenses 16 and 17 are disclosed as plastic, Ori takes no notice of the change in spectral characteristics of transmittance of the lenses. As a result, Ori could not possibly disclose anything concerning a compensation for such a change, much less a compensation by providing an optical member having a spectral characteristic of transmittance or reflectance similar to the inverse of the spectral characteristic of the transmittance of the plastic lens. For at least this reason, Ori is clearly distinguished from Claim 22.

Takanashi is seen to disclose a multi-function electrophotography apparatus including the functions of a laser beam printer and a copying machine. To perform these two functions, Takanashi's apparatus consists of two separate optical systems, a printing optical system and a copying optical system, each with distinct components that direct light from two distinct sources. Specifically, the laser beam printer optical system, shown in FIG. 1 and FIG. 2A, uses a scanning optical system to direct light from semiconductor laser 9 through a rotatable polygonal mirror 8 to rotatable drum 15. The copying machine optical system, shown in FIG. 2B, does not use a scanning optical system but rather reflects light through a series of mirrors from a copied original on the surface of an unnumbered glass plate onto photosensitive drum 15.

FIG. 2B of Takanashi, which is cited in the Office Action, is unrelated to the claims of the present application because FIG. 2B illustrates Takanashi's copier system

which does not include a scanning optical system. Therefore, one skilled in the art would not look to Takanashi FIG. 2B to address the situation of the present invention. Thus, Takanashi's FIG. 2B cannot be combined with Ori. (See MPEP § 2141.01(a)).

As for Takanashi's FIG. 2A, which at least contains a scanning optical system and thus is arguably related to Ori's scanning optical system, this figure is unrelated to the present invention at least because it does not disclose an optical member having a spectral characteristic of transmittance or reflectance similar to the inverse of a spectral characteristic of the transmittance of a plastic lens.

In addition, regarding dependent Claim 34, even if Takanashi could be combined with Ori, Takanashi does not disclose the material of which mirror 54 is formed. Therefore, it is impossible to know, as the Office Action asserts, that the reflectance of mirror 54 becomes higher as the wavelength of the light beam from the light source becomes shorter. (Office Action p. 3). For this additional reason, Claim 34 is clearly distinguished from the applied references.

New Claims 37 to 46 are added for the purpose of broadening scope, since the claims are non-specific as to a relationship between spectral characteristics of the optical member and those of the plastic lens. Thus, Claim 37 includes an optical member that forms part of an imaging optical system which also includes a plastic lens, wherein transmittance or reflectance of the optical member increases as the oscillation wavelength of the light source decreases.

Claim 37 is believed to be allowable over the art of record because the art of record is not seen to disclose such an optical member.

In view of the foregoing amendment and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

There are two formal matters involving Information Disclosure Statements. First, Applicant respectfully requests consideration of the art cited in the Information Disclosure Statement dated December 3, 2004. Second, Applicant also respectfully requests consideration of the Information Disclosure Statement filed concurrently herewith.

Applicant's undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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